

AML D 2022



AI that humanizes Customer Service

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DEUTSCHE TELEKOM



LIFE IS FOR SHARING.

Service Innovation



Voice Analytics @ DTS



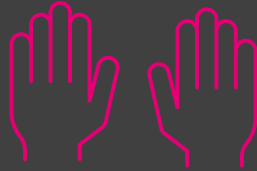
Use case 1: Detecting customer contact reason – **post factum analytics**



Use case 2: Agent support with automated search in the knowledge management base – **real time analytics**

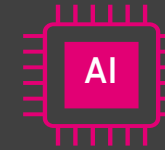
Customer contact reason

BEFORE



The screenshot shows a CRM system interface with a customer contact form. The form includes fields for customer name, address, and contact information. There are several dropdown menus for selecting contact reasons, such as 'Klasse', 'Gruppe', 'Bemerkung', 'Transfergrund', 'Kontaktart', 'Bestand', 'Auftragsposition', 'Folgefall zu', 'Massenfall', and 'Offene Aktivitäten'. The 'Bemerkung' dropdown is open, showing a list of reasons like 'Änderung', 'Produktwechsel', 'Bereitstellung', 'Umzug', 'Anbieterwechsel', etc. The 'Transfergrund' dropdown is also open, showing reasons like 'Rechnung nach Kündigung', 'Aktionspreis beendet', 'Aktionspreis fehlt', etc.

NOW

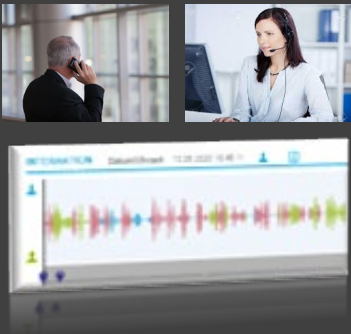


The screenshot shows an AI-powered interaction review interface. It features a call transcript at the top, followed by a detailed analysis of the interaction. The analysis includes a timeline of the call, a list of key events, and a summary of the interaction. The interface is designed to provide a comprehensive overview of the customer contact, allowing for quick identification of issues and opportunities for improvement.

Customer contact reason

Calls recording

We record millions of customers' calls with consent in a secure and anonymized way.



Transcription

Recordings are transcribed to text, and augmented with metadata like call id, time stamps, segment info, etc.



Classification

Call transcripts are classified based on the word combinations and words position.

MVP: Main call reasons



Analytics

Deep-dive analysis on call reasons and predictive models with other data in the data lake.



Customer contact reason – Benefits

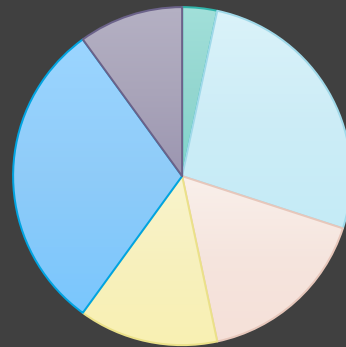
1) Detecting the call reasons where we can improve our processes

2) Daily ad-hoc deep dives into campaigns or events response

3) Analysis and predictive models with additional data

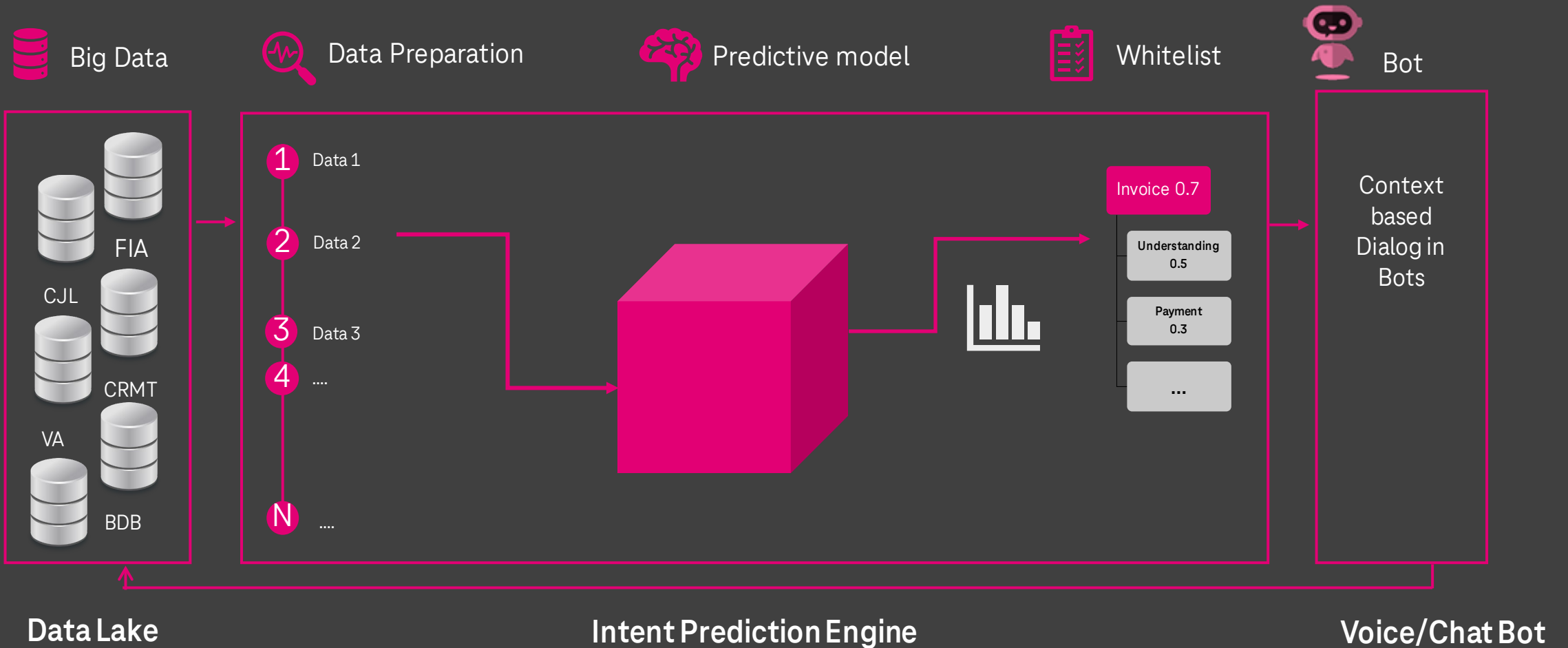


Disney + calls

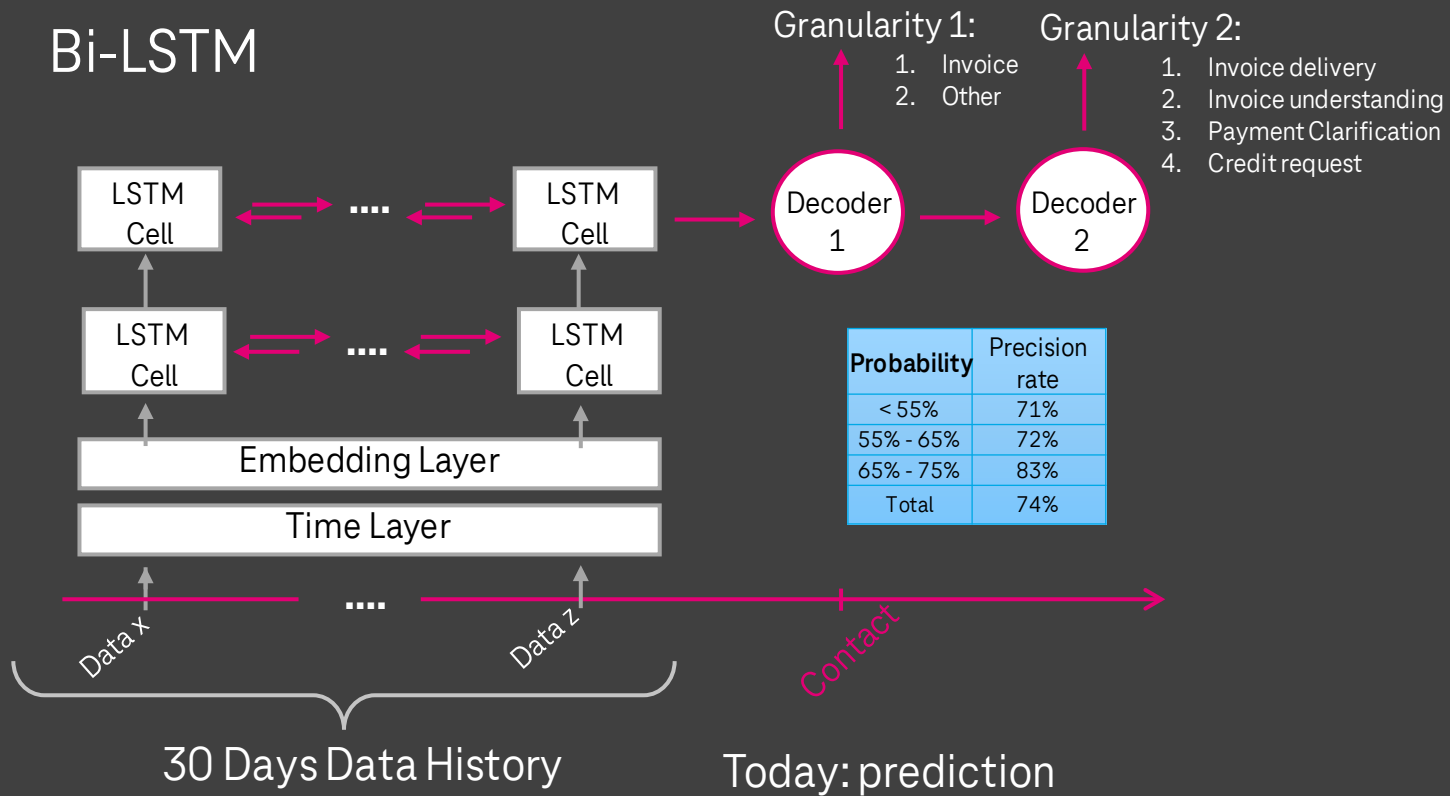


- Analyse the feedback per topic, per channel in order to improve the NPS
- Bring the correct contact history to the front end application
- Predict sales intent in order to combine it with NBA
- Predict the call intent to customize the chat/voice bot dialogs

Intent prediction process



Current encoder and the lessons learned



- LSTM works good for intent prediction where we have time series on the input data
- Time layer is like positioning layer that complement the order information
- Two LSTM layers give good results, the third one does not improve much the performance
- In our case Bi-LSTM shows better performance
- Softmax on the decoder sides
- Limited for more output predictions (categories)
- Iterative process that requires computational power for more features on input side
- Long time series are numerically unstable

Move to transformer

Take aways

- **Cost case:** The uses case for contact reasons is an enabler. The measures with efficiency factor follow after we get the analytical results.
- **Low WER** of a customized audio model: Important, although the main contact reasons can be detected with analysis of a 10 min. conversation.
- **Interface:** Yes or no for easy-to-use interface, depends on how do you plan to use the transcript and how frequently to build categories or detect trends.
- **Legal aspects:** Protect customer identity! Recording voice requires anonymization, customer consent and environment for audio processing compliant with GDPR and additional German data privacy regulations.

Voice Analytics @ DTS



Use case 1: Detecting customer contact reason – **post factum analytics**

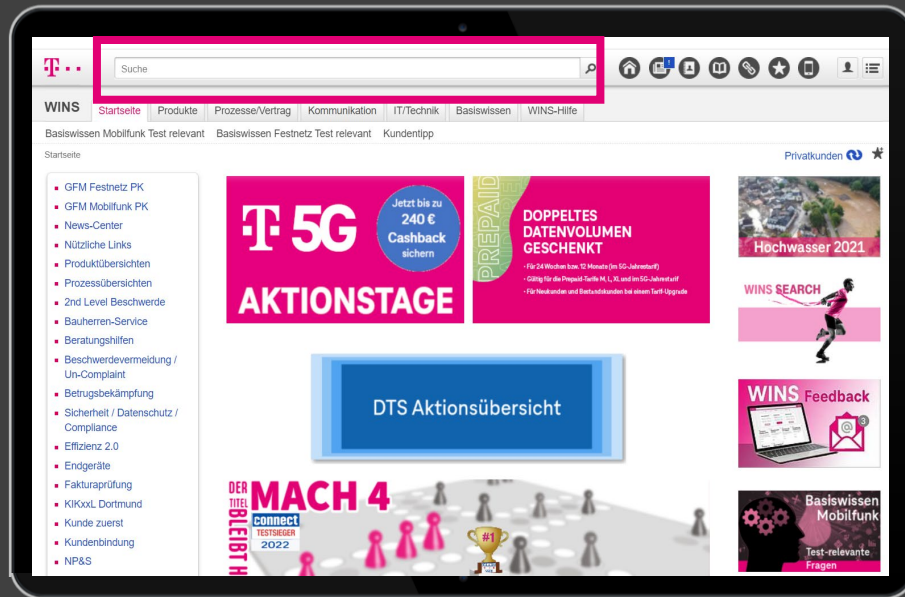


Use case 2: Agent support with automated search in the knowledge management base – **real time analytics**

Search in the KM base during the call

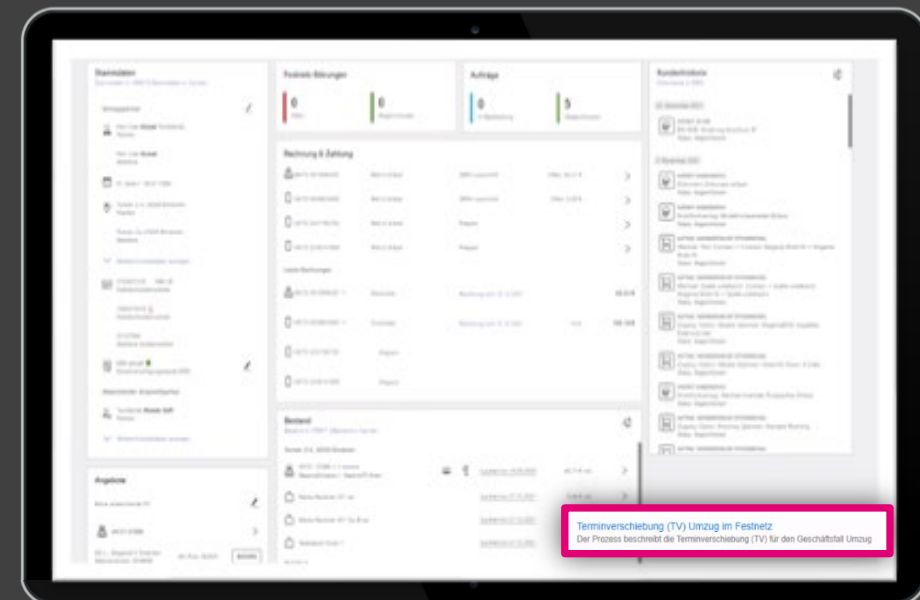
BEFORE

TYPE AND SEARCH IN A SEPARATE APPLICATION



NOW

AUTOMATED NOTIFICATION IN THE FRONT END APPLICATION

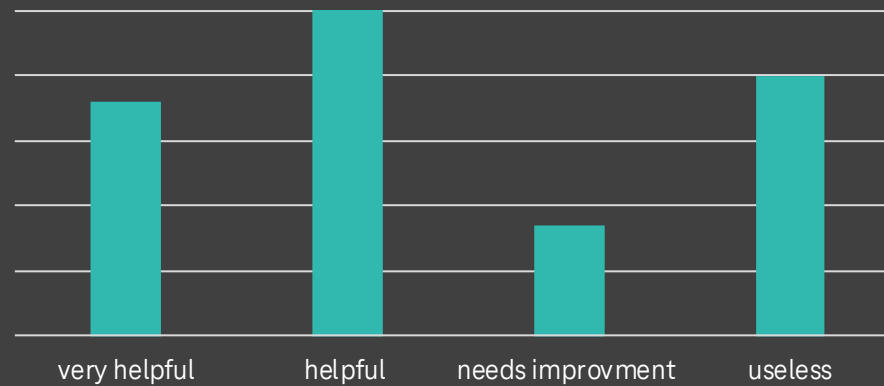


AI that humanizes Customer Service and we turn customer into fans



POC results

- ✓ **Rule based**, simple to start with existing test recorders and test the topic recognition in real time.
- ✓ **Search in the KM base was eliminated** by using static table of content (links to KM base) behind the rules.
- ✓ **Good result for the real time recognition**, 43 rules cover 47% of the calls and in 72% of the evaluated calls the link was correct.



- ✓ **Scaling up** requires good granularity and another architecture.

Challenges – Solutions – Benefits

- **100% calls covered**: We are only allowed to do STT for a short period of time in order to match and we do not record later. We cover 100% of the contact reason with these approach.
- **Very low WER** of a customized audio model: as we analyze in real time, we have shorter time window to map with the text from the KM base. Better WER can be reused for the recorded calls.
- **Efficiency case**: The business case is based on decreasing the CHT and the call forwardings. The MVP is evaluated by the agents in terms of good customer experience and high accuracy.
- **Industrialization of AI**: VA is a small piece in the complexity of telecoms. Synergies between different voice use cases still to be lifted.

